I. Amendments to the Claims are reflected in the listing of claims which begins on page 3 of this paper.

II. Remarks begin on page 10 of this paper.

I. Amendments to the Claims

This listing of claims replaces without prejudice all prior versions and listings of claims in the application:

Listing of Claims:

1. (Previously Presented) An optical radiation sensor device for detecting radiation in a radiation field, the device comprising:

a stationary radiation source;

a stationary radiation sensor element positioned to receive radiation from the radiation source;

a boundary element disposed between the radiation source and the radiation sensor element to define a thickness corresponding to the distance between the boundary element and the radiation source; and

motive means to alter the relative distance between the boundary element and the radiation source to thereby alter the thickness of the radiation field from a first thickness to a second thickness;

the sensor element capable of detecting and responding to incident radiation from radiation source at the first thickness and at the second thickness.

2. (Cancelled)

3. (Cancelled)

4. (Cancelled)

5. (Cancelled)

6. (Cancelled)

7. (Cancelled)

8. (Cancelled)

9. (Cancelled)

10. (Cancelled)

11. (Previously Presented) The optical sensor device defined in claim 1, wherein the motive means alters the relative linear distance between the boundary element and the radiation source.

12. (Cancelled)

13. (Original) The optical sensor device defined in claim 1, wherein the motive means alters the thickness of the radiation field in a step-wise manner.

14. (Original) The optical sensor device defined in claim 1, wherein the motive means alters the thickness of the radiation field in a continuous manner.

15. (Original) The optical sensor device defined in claim 1, wherein the device is submersible in a fluid of interest.

16. (Original) The optical sensor device defined in claim 1, wherein the device is submersible in a liquid of interest.

17. (Original) The optical sensor device defined in claim 1, wherein the device is submersible in water.

18. (Original) A radiation source module comprising the optical sensor device defined in claim 1.

19. (Original) A fluid treatment system comprising the optical sensor device defined in claim 1.

20. (Original) A water treatment system comprising the optical sensor device defined in claim 1.

21. (Original) A water disinfection system comprising the optical sensor device defined in claim 1.

22. (Previously Presented) A process for measuring transmittance of a fluid in a radiation field, the process comprising the steps of:

(i) disposing the optical radiation sensor device defined in claim 1 in the fluid;

(ii) generating radiation from the radiation source

(iii) detecting a first radiation intensity corresponding to radiation received by the sensor element at the first thickness;

(iv) altering the first thickness to define a second thickness;

(v) detecting a second radiation intensity corresponding to radiation received by the sensor element at the second thickness; and

(vi) calculating radiation transmittance of the fluid in the radiation field from the first radiation intensity and the second radiation intensity.

23. (Cancelled)

24. (Cancelled)

25. (Cancelled)

26. (Cancelled)

27. (Cancelled)

28. (Cancelled)

29. (Cancelled)

30. (Cancelled)

31. (Previously Presented) The process defined in claim 22, wherein Step (iii) comprises altering the relative linear distance between the radiation source and the radiation sensor.

32. (Cancelled)

33. (Previously Presented) The process defined in claim 22, wherein Step (iii) comprises altering the first thickness of the radiation field in a step-wise manner.

34. (Previously Presented) The process defined in claim 22, wherein Step (iii) comprises altering the first thickness of the radiation field in a continuous manner.

35. (Currently Amended) An optical radiation sensor device for detecting ~~radiation~~ fluid transmittance in a radiation field generated in a fluid flow of interest, the device comprising:

a radiation source submersible in the fluid flow of interest;

a submersible first radiation sensor element positioned in the fluid flow of interest at a first distance from the radiation source, said first radiation sensor element being configured to measure a a first intensity of the radiation field in the fluid flow;

a submersible second radiation sensor element positioned in the fluid flow of interest at a second distance from the radiation source, said second radiation sensor element being configured to measure a a second intensity of the radiation field in the fluid flow, said second radiation sensor element being disposed substantially parallel to said first radiation sensor element with respect to a direction of the fluid flow;

structure to use the first intensity and the second intensity to calculate fluid transmittance in the radiation field;

wherein: (i) the first distance is different from the second distance, (ii) the first radiation sensor element is capable of detecting and responding to incident radiation from said radiation source at the first distance, and (iii) the second radiation sensor element is capable of detecting and responding to incident radiation from said radiation source at the second distance.

36. (Original) A radiation source module comprising the optical sensor device defined in claim 35.

37. (Original) A fluid treatment system comprising the optical sensor device defined in claim 35.

38. (Original) A water treatment system comprising the optical sensor device defined in claim 35.

39. (Original) A water disinfection system comprising the optical sensor device defined in claim 35.